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GEOGRAPHIC INTELLIGENCE REPORT

DOMINICAN REPUBLIC

PART V: CLIMATE



CIA/RR GR L-61-1, Part V

March 1961

CENTRAL INTELLIGENCE AGENCY
OFFICE OF RESEARCH AND REPORTS

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DOMINICAN REPUBLIC

PART V: CLIMATE

I. General

Meteorological data on the Dominican Republic are best described as sketchy, incomplete, discontinuous, and probably inaccurate or, at least, misleading. Nevertheless, the data are sufficient to indicate that the island of Hispaniola has a complex of climates in contrast to its neighbors to the west and east -- Cuba and Puerto Rico -- both of which have relatively homogenous climates.

As a rough generalization, the coastal and other low-lying areas of the Dominican Republic are hot and wet (with the exception of some parts of the southwest that are hot and dry), whereas the high interior is warm and only fairly wet (see Map 29811, following p. 10).

II. Temperature

The hottest areas of the country are along the northern coast, from the Haitian border to the eastern tip of the island, and in the far southwest, including the lower parts of the Bahoruco Peninsula. In these areas, mean annual temperatures are 79°F and above, and maximum recorded temperatures have exceeded 100°F. The higher parts of the Cordillera Central northeast of Constanza, on the other hand, have mean annual averages of 63°F and below. For purposes of comparison, Gainesville, in north-central Florida, has a mean annual temperature of 69°F; and Long Key, in the southernmost part of the state, has a mean annual temperature of 77°F.

The differences in temperature between the coastal area and the higher elevations of the interior are best exemplified by the records of Ciudad Trujillo, 69 feet above sea level, and Constanza, some 3,900 feet in elevation. Ciudad Trujillo has monthly average maximum temperatures that range from 84°F in January to 88°F during the period July through September and average minimum temperatures of 66°F in January and 73°F in August. Detailed climatic data on Ciudad Trujillo are given in Table 1 (see p. 3). Constanza is fairly representative of the 20 percent of the country that lies at elevations of 3,000 feet and above. The average maximum temperature at Constanza ranges from 76°F in January to 79°F in September and the average minimum from 49°F in February to 55°F in May. Frosts are not unknown and probably are fairly frequent during the winter in the 7 percent of the land area of the republic that lies above 5,000 feet.

III. Rainfall

Average rainfall varies more from one part of the island to another than does the temperature, ranging from 80 or more inches on the northeast coast to 15 inches or less in the southwest. Although the higher parts of the Cordillera Central probably receive well in excess of 80 inches, no reliable records are available to validate the probability. Such wide variations in the average annual rainfall of the Dominican Republic result in part from the relationship between two strong climatic controls -- the trend of the mountain ranges and the direction of the prevailing winds. The mountains of the Dominican Republic trend from slightly west of north to slightly east of south and from west-northwest to east-southeast whereas the prevailing winds blow from the northeast

Table 1

CIUDAD TRUJILLO

	Temperatures			Relative Humidity (Percent)	Rainfall	
	Mean Monthly (OF)	Mean Daily Max (OF)	Min (OF)		Average (Inches)	Number of Days
January	75	84	66	73	2.4	6
February	76	85	66	70	1.4	5
March	76	84	67	73	1.9	6
April	77	85	69	74	3.9	8
May	78	86	71	76	6.8	11
June	80	87	72	76	6.2	13
July	80	88	72	77	6.4	14
August	80	88	73	76	6.3	12
September	80	88	72	76	7.3	12
October	80	87	72	76	6.1	10
November	78	86	70	76	4.9	9
December	76	85	67	73	2.4	6

PUERTO PLATA

January	74	80	68	80	7.1	14
February	74	80	67	78	5.8	10
March	74	80	68	77	4.3	10
April	76	82	69	79	6.3	9
May	78	84	71	79	5.5	10
June	79	85	73	80	2.3	6
July	80	85	74	81	3.2	9
August	80	86	74	81	2.9	8
September	80	86	74	80	3.9	7
October	79	86	72	80	4.7	8
November	76	82	71	82	14.6	14
December	74	80	69	80	9.3	15

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to east. As a result all four mountain chains cast some rain shadows because the rain-bearing winds deposit most of their moisture on the windward slopes and blow down the leeward side of the mountains as drying or relatively dry winds. The rain shadows are not deserts, however, because they receive moisture in the form of tropical downpours in May to July, the period of high sun and copious rainfall associated with the low pressure areas, including hurricanes, that pass over the island in September and October. Although these areas are not forested, they receive precipitation sufficient to support a grass and scrub vegetation.

In general, the rainfall decreases from the very rainy northeast coast -- the stretch between Puerto Plata and the eastern tip of the island -- to the semiarid southwest corner of the country. Detailed climatic data on Puerto Plata are given in Table 1. Exceptions to the above generalization occur in areas of heavy rainfall such as San Cristóbal (72 inches), Dajabón (60 inches), and Elías Piña (55 inches) and in the subhumid western end of the Cibao Valley between Montecristi (30 inches) and Valverde (28 inches) where rainfall is anomalously light and quite unreliable.

The reliability and the predictability of rainfall decreases from northeast to southwest and from east to west. In the drier parts of the west, where the natural vegetation is thorn forest and scrub, it is not unusual for an area to receive 0.1 inch of rain in a given month in one year and to receive 13 inches during the same month in the following year. Even in the humid east rainfall can be unreliable. According

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to records, Seibo in the eastern part of the republic had 14 inches of rainfall in March one year, but in the next two years March was completely rainless.

The number of dry seasons per year and their duration varies considerably from one part of the country to another. Along the rainy northeast coast there is no truly dry season but merely a less rainy season that usually lasts from January through April. The southeast and parts of the southwest along the Haitian border have a single dry season, which occurs from December through March or April in the more humid southeast and from November through April in the southwest. The rest of the country, about 50 percent of the total area, has two dry seasons -- a fairly well-defined one from December through April and a shorter and less pronounced dry season during June and July.

During most of the year, rain occurs chiefly in the form of heavy downpours accompanied by lightning and thunder. East of a line drawn arbitrarily through San Cristóbal, La Vega, Santiago, and Puerto Plata some 110 to 120 days with rain can be expected annually. Four inches of rainfall in 24 hours is not exceptional. The heaviest recorded 24-hour rainfall was 12.36 inches in Puerto Plata.

The only place in the country where rainfall would be likely to have a direct and adverse effect on overland movement would be along the northeast coast, including the Samaná Peninsula. There the torrential downpours could produce water-logged soils and streams in spate and could temporarily, at least, slow or halt movement.

IV. Winds

Over most of the island the Northeast Trades are the predominant winds. These winds may veer to the east and occasionally to the south-east, but they are so dominantly from the eastern quarter that the words barlovento (windward) and sotavento (leeward) are often used in giving directions. The Trade Winds are fairly constant and are responsible for the equitable and relatively comfortable temperatures of the island. Their velocities commonly range from 5 to 30 miles an hour. Another set of winds that help create a pleasant climate are the land-sea breezes that moderate the temperatures along the coast, blowing onshore during the day and offshore at night.

The Dominican Republic lies in the midst of the hurricane belt and occasionally has suffered dire damage from these tropical cyclones. In 1930, most of the city then called Santo Domingo was laid flat. In rising Phoenixlike from its rubble the stricken city became the present Ciudad Trujillo. In the 85-year period between 1851 and 1935, some 20 tropical storms -- not all of them of hurricane strength -- passed over the republic, an average of about 1 every fourth year. Fortunately, the damaging part of the storm path usually has been relatively narrow, and on the average the areas actually affected have been free from storm damage for periods considerably longer than 4 years. The north coast of the republic and the Cibao Valley experienced no hurricane damage from 1900 to 1938.

Tropical storms that do not pass near enough to the south coast to make their presence evident in the weather sometimes cause heavy seas.

This phenomenon is known locally as mar desbordado (inundating sea) and is especially dangerous to shipping because it appears with little or no warning.

25X1C V. Weather Factors [REDACTED]

[REDACTED]
[REDACTED] hurricanes during the period from May through November, particularly during the late summer and early fall. Except for conditions encountered in the vicinity of hurricanes the weather is generally favorable [REDACTED] throughout the year. The percentage of risk of encountering unfavorable weather (winds in excess of 27 knots) in the Dominican Republic for at least 1 or 2 days at a time is as follows:

Duration of Unfavorable Weather	Percentage of Risk			
	Feb	May	Aug	Nov
1 day	7	3	12	6
2 days	3	0	5	3

25X1C A. Ship [REDACTED]

The high percentage of low sea swells and low wind speeds is favorable [REDACTED] at sea. Delays or damage may occur when hurricanes develop, especially along the south coast, which is subject to the mar desbordado. Fog is too rare to be considered either as aiding or hampering navigation [REDACTED] 25X1C

25X1C B. Air [REDACTED]

Light ground fog occurs in the low areas along the north coast during December and January; otherwise, only rain might restrict visibility. There is considerable cloudiness throughout the year, with a maximum

during the rainy seasons. Icing below 12,000 feet is negligible throughout the year, but conditions conducive to icing do occur in cumulonimbus clouds from 13,000 to 18,000 feet.

25X1C

C. Movement [REDACTED]

Along all coasts, land and sea breezes are the predominant surface winds, with the weakest winds occurring during the early morning and the strongest during midafternoon. Surf conditions will be most pronounced along the exposed beaches at times when the pressure pattern and swell direction coincide with the sea breeze. High surf also can be expected during squalls, hurricanes, and the mar desbordado.

25X1C

D. [REDACTED]

25X1C

The visibility-cloudiness factor is generally favorable [REDACTED]

25X1C

[REDACTED] the year round. Thunderstorms are numerous, however, and the storms and cloud are likely [REDACTED] frequently during the rainy seasons. 25X1C

E. Radar and Line-of-Sight Radio

Atmospheric conditions conducive to extended ranges of ducting of line-of-sight radio and surface radio are frequently present in the area to the north of the Dominican Republic. When the trade-wind inversion becomes well established in the winter and spring, anomalous patterns (radio holes) of air-search radar will occur in the vicinity of the Dominican Republic.

F. Sonar

The best sonar conditions, on the basis of variations of wind-velocity and sea-temperature profiles, occur during the winter and the poorest

conditions during the summer. Ideal echo-ranging conditions in deep water vary from about 60-65 percent in February to 35-40 percent in August. Sonar conditions are poor in the areas of shallow water. In all sonar operating areas, extensive areas of moderate background noises (20 to 40 decibels; 0.2 to 20 kilocycles) are created by major concentrations of snapping shrimp and sonic fish.

G. Survival in Water

Sea-water temperature ranges from 77°F in February to 83°F in August. An individual with ordinary clothing and a life jacket can be expected to survive more than 12 hours in 77-degree water and up to his fatigue factor in water above 80 degrees.

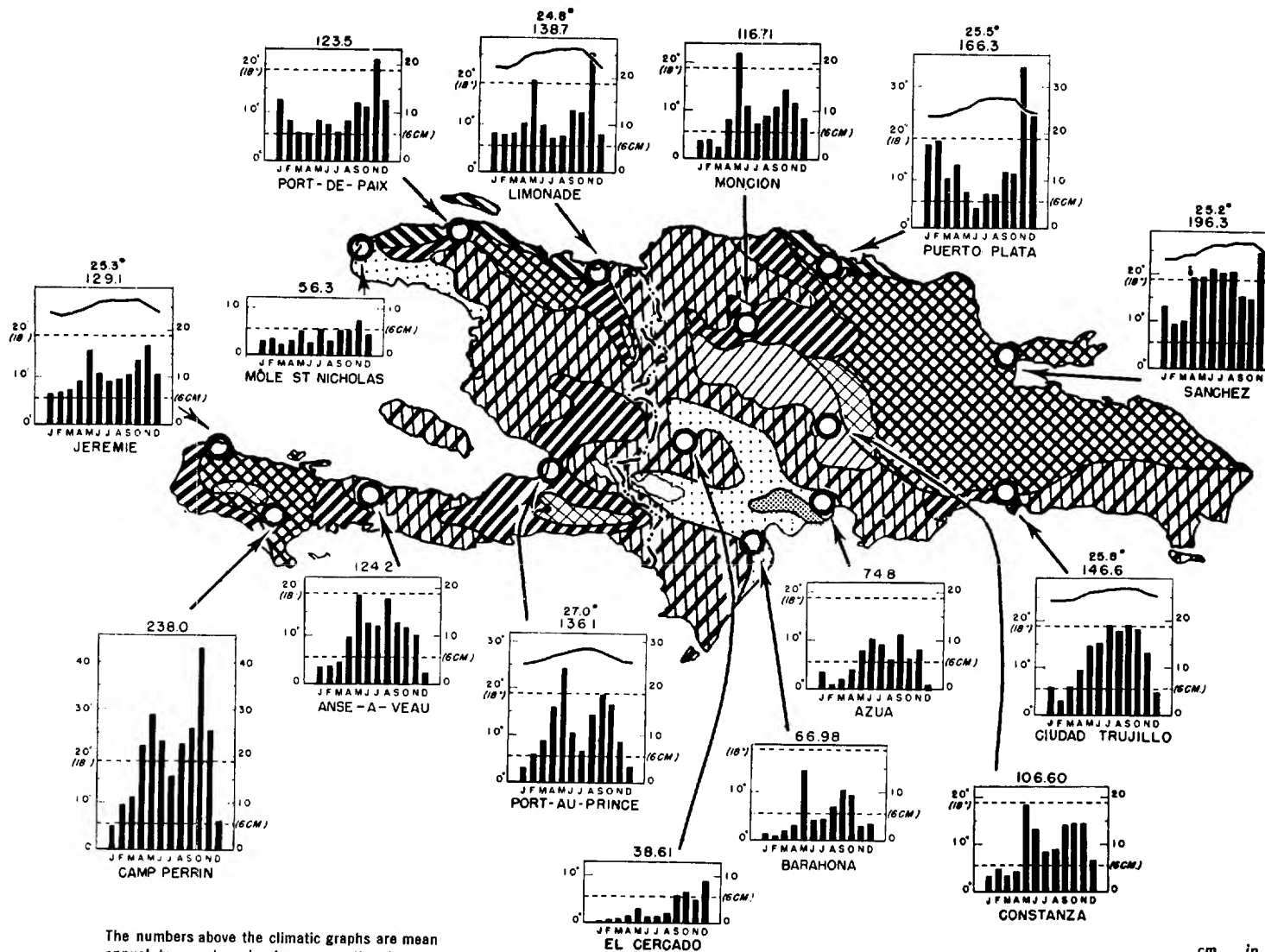
VI. Comments on the Accompanying Climatic Map

Although the map that accompanies this report, Dominican Republic and Haiti: Climatic Regions (Map 29811), has much to recommend it, it also has a few deficiencies that should be noted. According to more recent rainfall statistics, the area of Climate 1 (rainfall heavy all year) is too large, extending too far south and east. In the eastern reaches, an area shown on the map as having Climate 1 actually has Climate 4 (dry season nearly half year); and in the south the boundary of Climate 1 should be moved northward and an area of Climate 3 (rainfall heavy most of year) should be inserted. The northwest part of the country (northwest of Monción) and the southwest (on the southwest shores of the Batoruco Peninsula) should be shown as having Climate 5 (mean annual rainfall less than 80 centimeters) rather than Climate 4.

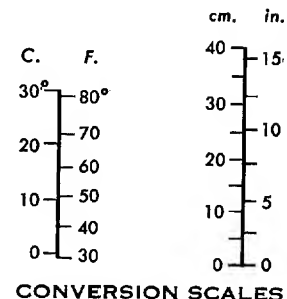
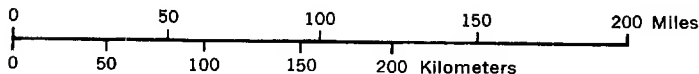
Because of the unreliability of Dominican statistics the amount of rainfall shown in the bar graphs for various stations, although possibly correct, is discrepant in relation to similar data appearing in other sources. (Incidentally, appreciable discrepancies occur among the other sources.) Regardless of differences in monthly and annual means, for rainfall, the pattern of annual rainfall distribution is in close agreement among all sources.

DOMINICAN REPUBLIC AND HAITI

Climatic Regions



The numbers above the climatic graphs are mean annual temperature in degrees centigrade and mean annual rainfall in centimeters.



TROPICAL CLIMATES (Mean of coldest month more than 18°C.)

1 RAINY ALL OR MOST OF YEAR
(Mean annual rainfall usually more than 120 cm.)

4 LONG DRY SEASON OR DRY MOST OF YEAR
(Mean annual rainfall less than 180 cm.)

COOL HIGHLAND CLIMATES
(Mean of coldest month less than 18°C.)



1 Rainfall heavy all year (not more than one month with mean rainfall less than 6 cm.)



4 Dry season nearly half year (4-6 months with less than 6 cm. mean monthly rainfall); usually November - April. (Mean annual rainfall 80-180 cm.).



7 Rainfall heavy all year (not more than one month with mean rainfall less than 6 cm.)



2 Rainfall heaviest in winter months (usually between September and February); short semi-humid period usually March - August, with secondary maximum usually in May



5 Mean annual rainfall less than 80 cm. where mean annual temperature exceeds 25°C. Rainfall maximum usually May - October



8 Long dry season (4-6 months with less than 6 cm. mean monthly rainfall)



3 Rainfall heavy most of year; short semi-humid period (2-3 months with less than 6 cm. mean monthly rainfall) usually December - April with secondary maximum in July



6 Mean annual rainfall less than 40 cm. where mean annual temperature exceeds 25°C. with rainfall maximum in May - October

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